Bay Area Air Quality Management District
Risk Screening Assessment, A# 6533
East Bay Municipal Utility District, P# 13728
January 28, 2003

This document describes the basis for the health risk screening assessment prepared for East Bay Municipal Utility District, 375 Eleventh Street in Oakland, California. This facility wishes to operate 10 natural gas fired turbine cogeneration units. In order to do this, the facility must get a permit from the Bay Area Air Quality Management District (BAAQMD). The BAAQMD, as a routine part of the evaluation of a permit application, prepared this screening risk assessment.

Acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, hexane, naphthalene, propylene oxide, polycyclic aromatic hydrocarbons, toluene and xylene, which are considered toxic air contaminants (TAC), will be emitted during the operation of the turbines. BAAQMD staff evaluates the possible impact of these TAC emissions that will occur during routine operation of the turbines. The TAC impact is expressed in terms of the increased risk of contracting cancer by individuals who live or work near the proposed turbines.

The estimated increase in each of the TAC emissions, in pounds per year, that can be expected from this source are summarized in the following table:

Toxic Air Contaminant	Annual Average Emissions, lb/yr
Acetaldehyde	36.3
Acrolein	4.92
Benzene	7.03
1,3-Butadiene	0.0095
Ethylbenzene	4.05
Formaldehyde	0.00000046
Hexane	27.1
Naphthalene	0.56
Propylene Oxide	4.17
Polycyclic aromatic hydrocarbons (as benzo(a)pyrene equivalents)	0.0446
Toluene	11.9
Xylene (Total)	4.45

Ambient air concentrations of the TAC were predicted using the ISCST3 air dispersion computer model. This model uses information about the facility and the emission rates of toxic air contaminants to estimate what concentrations would be expected in the air at various locations around the site. The estimated concentrations of TAC are used to calculate the possible cancer and noncancer health risk that might be expected to arise from these exposures.

The potential cancer risk was calculated using standard risk assessment methodology. For residents, they include the assumptions that exposures are continuous for 24 hours per day, 7 days per week for 70-years. For students, the assumptions include attendance 8 hours per day, 200 days per year, every year. The cancer risk is based on the "best estimates" of plausible cancer potencies as determined by the California Office of Environmental Health Hazard Assessment (OEHHA). The actual cancer risk, which cannot be determined, may approach zero. This type of analysis is considered to be health-protective.

The potential for noncancer health effects is evaluated by comparing the long-term exposure level to a Reference Exposure Level (REL). A REL is a concentration level at or below which no adverse health effects are anticipated. RELs are designed to protect sensitive individuals within the population. Comparisons to RELs are made by determining the hazard index, which is the ratio of the estimated exposure level to the REL.

The proposed operation would result in a maximum increased cancer risk of 0.2 chances in a million and a hazard index of 0.02 for nearby residences. For the students at Oakland International School, the increased maximum cancer risk is 0.03 chances in a million and the hazard index is 0.004. For the students at Lincoln Elementary School, the increased maximum cancer risk is 0.02 chances in a million and the hazard index is 0.002. These health risk values, presented in the table below, meet the criteria for acceptable levels established in the BAAQMD's Risk Management Policy.

Health Risk Results		
Receptor	Maximum Increased Cancer Risk	Hazard Index
Residential	0.2 chances in a million	0.02
Oakland International School	0.03 chances in a million	0.004
Lincoln Elementary School	0.02 chances in a million	0.002